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ABSTRACT

Part of a comprehensive career guidance system in Canada, Computerized Heuristic Occupational Information and Career Exploration System (CHOICES) is an interactive computerized career information system in both French and English that allows people to interrogate and explore two data bases: one, a comprehensive, up-to-date file of occupations organized by Canadian province, and the second, a file of all postsecondary educational/training institutions in Canada. By using its files, people can examine the ways in which their own interests, abilities, expectations, education, and other personal characteristics influence the range of opportunities available to them. The Occupations File can be accessed by thirteen different approaches, of which the Occupational Titles route has a unique capability: besides giving specific information about the 650 occupations covered by the data base, it can compare three occupations at a time and can generate lists of related occupations. For optimum benefit, the system should be used in conjunction with a career counselor who can pre-plan the interaction and evaluate the output. By providing career information in an unbiased and systematic manner, it shows all of an individual's occupational choices, and by allowing one to interact directly with the system, it increases an individual's level of participation in the counseling process and, in general, facilitates more meaningful client-counselor communication. (ELG)

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COMPUTERIZED HEURISTIC OCCUPATIONAL INFORMATION AND CAREER EXPLORATION SYSTEM

DEPARTMENT OF MANPOWER AND IMMIGRATION

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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CHOICES is a project of the Advanced Development Division of the Occupational and Career Analysis and Development Branch.

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CHOICES is an experimental project in computerized occupational information retrieval and, as such, it is still in the developmental phase. The projected date of implementation is late in 1978 and, therefore, the description of the system contained in this book is subject to future changes. The following description of CHOICES has been prepared in response to the many people and agencies who have expressed an interest in the system.

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The Department of Manpower and Immigration strives to meet Canada's labour needs through rapid matching of jobs and workers. Through the years many first-rate programs have been created with this end in view. Generally, it has been assumed that people know or can quickly discover what type of work they want to do. This is simply not the case. Therefore, to meet the individual's need for reliable career information, the department has designed a computerized information retrieval system that allows people to examine career options systematically.

Background

A great many people, including those who are currently employed, do not know what they most wish to do and have no idea how to find out. Even with the help of a counsellor they often cannot choose a suitable occupation. As a result, all too often clients are pigeon-holed into the wrong job vacancies, upgrading programs and skill training programs. The waste, in terms of misallocation of human resources and time, and the less than optimal use of departmental financial resources, may be very large.

People are not very good at making decisions about their careers. Recent surveys suggest that of the several hundred thousand *young people* who leave school each year in Canada *about six out of every ten either have not made any decisions about the type of work they would like to do or have chosen inappropriately.* Predictably this leads to instability as evidenced by high job turnover rates in this age group. For many the result is unemployment, frequently of a recurring nature. This situation explains in large measure the phenomenon that almost 50 per

cent of the clientele of Canada Manpower Centres is between 14 and 24 years of age.

People who do find employment all too often drift into career fields for the most superficial reasons: a friend took a course in auto repair; a parent suggested law; or a relative knew of a vacancy in the factory where s/he worked. Many people's career patterns are determined by chance and other basically irrelevant factors. *In few, if any, other aspects of their lives are people as naive, disorganized, and unscientific as they are about this singularly important element.* Considering their haphazard methods of choosing careers, it is not surprising that months or years after they enter the labour force, many people come to realize that their interests and abilities simply are not compatible with the requirements of the occupation in which they work.

This situation is not unique to youth. People do a poor job of career decision-making for a variety of reasons. Three of the most important are:

1 with few exceptions, people are not taught simple strategies for making intelligent, informed career decisions, despite the fact that these can be readily taught and learned;

2 the task seems overwhelming. There are literally thousands of jobs in this country. How can a person know enough about them to select those that are optimally suitable.

3 available information is not systematized in ways that facilitate personalized career exploration.

Effective career decision-making requires that people understand themselves and can relate this understanding to the full range of available occupational, education and training options. In attempting to formulate career plans, people seek answers to many questions. Furthermore, *they continue to refine and modify their questions and answers throughout their lives.*

The questions would include:

1 "What type of a person am I?"

2 "What do I enjoy doing?"

3 "What can I do well?"

4 "What am I looking for in my career?"

5 "From among the thousands of occupations that exist in Canada how can I find out about all of those that might provide me with the greatest possible personal satisfaction?"

6 "What education and/or training will I require; where can I obtain it; how much will it cost; etc?"

Traditionally, question number five has caused problems. Frustration in not being able to identify a suitable answer appears to be a very *important single element in turning people away from a systematic consideration of their career options.* Most people feel they know something about themselves and to some extent (often in vague terms) what they want, but many simply cannot *connect* this information with options available in the working world. Anyone undertaking a thorough attempt to relate *'self'* to the world of work would require an *all-inclusive file of information about all occupations and educational/training programs, and a simple means of extracting only that information congruent with his or her personal profile of interests, aptitudes, values, educational aspirations, etc.*

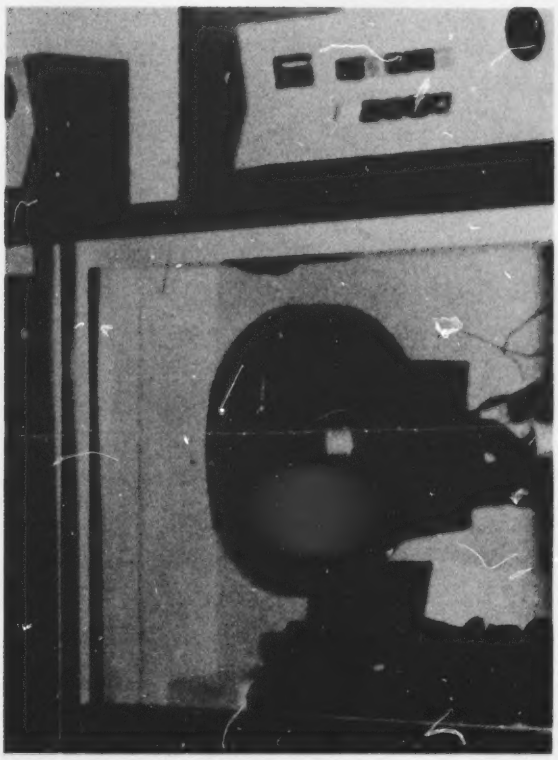
CHOICES makes this possible for people, *through direct conversation with a computer.*

Overview of CHOICES

CHOICES is an interactive computerized career information system. It allows people to interrogate and explore a comprehensive, up-to-date and provincially relevant data file of occupations and a national data file of all post-secondary education/training institutions in Canada—*at a speed and with a thoroughness beyond human capacity.* People communicate directly with the computer in a conversational mode, with the computer addressing them by their first names.

By exploring CHOICES information files, people can examine the ways in which their own interests, abilities, expectations, educational aspirations and a variety of other personal dimensions influence the range of opportunities available to them. The strength of this manner of exploration lies both in the *quality of the stored information* and in the fact that people are able to interact directly with the information. Because CHOICES users immediately see the consequences of each decision they send to the computer, they can change their minds and their exploration strategy at any point.

CHOICES instantly produces facts for effective career decision-making. A simple example: suppose a person wishes to identify all of the occupations in his or her province with a salary range in excess of $12,000, and all post-secondary institutions in Canada offering courses in Interior Design. These are only two of the *myriad of questions* to which our hypothetical person may need answers in deciding upon his or her career. To answer either completely would require plenty of time and effort on the individual's part, assuming that he or she *could* obtain all the neces-



sary information. CHOICES *provides complete and accurate answers to either of these questions in less than one second of "thought" on the part of the computer.*

CHOICES drastically reduces the communication gap between the facts and the people who need them. At the same time it places users in total control of the career exploration process. Furthermore, the comprehensiveness of the stored information exposes users to a far wider array of career possibilities than they would otherwise consider, even with the assistance of a counsellor.

This system provides more freedom in accessing strategies than any currently operational system of its kind. The intention has been to provide *as many ways as possible* for users to relate their personal realities to the realities of the world of work.

The CHOICES system has economical computer storage requirements. It can be run on almost all types of computer. Developed on a Burroughs 6700, it has been designed to convert easily to other machines and uses the COBOL programming language.

How will people use CHOICES?

The system has been designed to be so straightforward that virtually anyone, whether or not he or she has ever used a computer terminal, will be able to interact *comfortably* with the computer *without assistance*.

Terminals can be made available in a variety of places so that people of all ages may have access to CHOICES. Terminal locations could include Canada Manpower Centres; university, college, vocational school, high school and junior high school guidance offices; correctional institutions; social service agencies; employers; and even shopping centres.

Though not essential, people will be encouraged to read a USER GUIDE before they approach the CHOICES terminal. This guide explains in simple terms the capabilities of the system, what information it possesses, and how to optimize their time at the computer terminal.

The USER GUIDE will explain that there are two major files in CHOICES: the *Occupations File* and the *Educational/Training Institutions File*. Although the search strategies are similar for both files, the information topics are naturally quite different.

The Occupations File

Built into the *Occupations File* are 13 separate routes for accessing the file, called *Exploration Routes*. They are:

1. Occupational Titles (CCDO Code Numbers)
2. Occupational Fields (CCDO Major Groups)
3. Occupational Interests
4. Occupational Aptitudes
5. Temperament Factors
6. Physical Demands
7. Physical Activities
8. Indoor/Outdoor Considerations
9. Conditions of Working Environment
10. Hours of Work, Travel, etc. Characteristics
11. Projections of Supply/Demand for Workers
12. Earnings
13. Education Requirements

The first *Exploration Route, Occupational Titles*, can be used in three separate ways. Users will be able to obtain *Specific Information* about any of the 650 occupations in the computer's memory. By giving the computer the appropriate CCDO code number and suitable cues, people can find out, for example, the *range of wages, educational requirements, future outlook, work duties, physical demands, etc*, for occupations in their province.

Still using the first *Exploration Route*, people will be able to *Compare* up to three occupations at a time. Individuals could, for instance, compare the *aptitude requirements, physical demands, training requirements, environmental conditions*, and many other topics for *Real Estate Appraisers, Computer Systems Analysts* and *Oceanographers* simul-

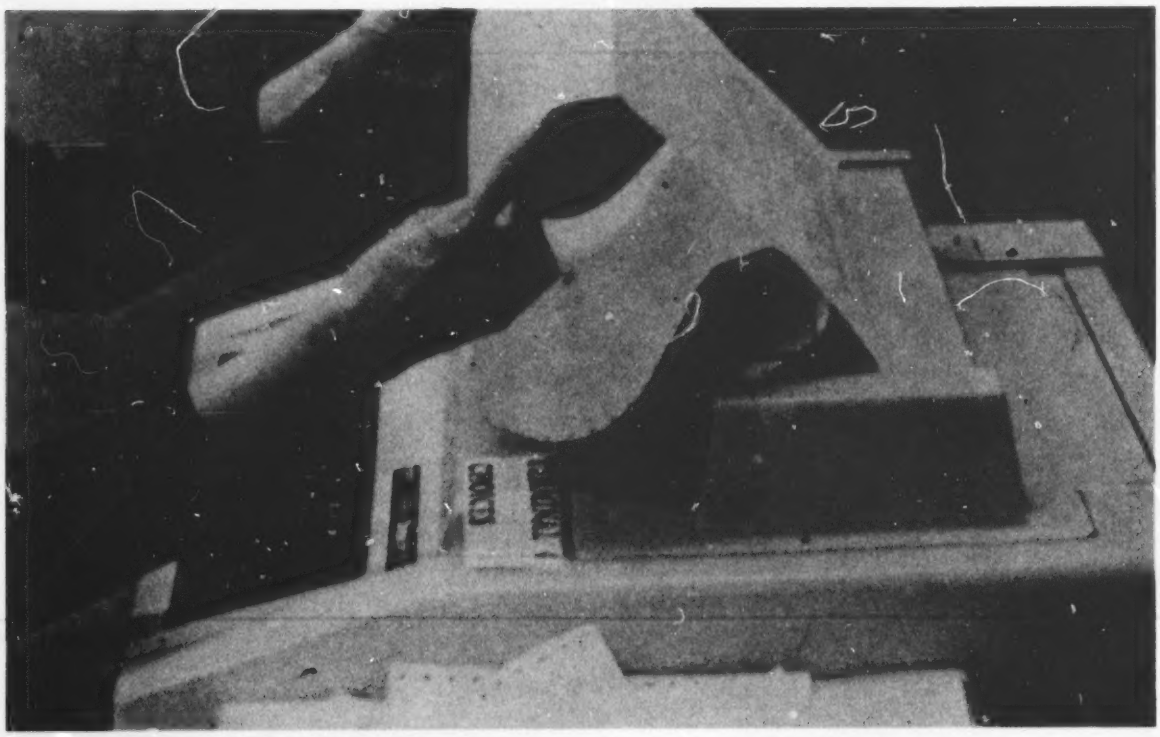
taneously. They can repeat this process to compare as many occupations on as many topics as they wish.

Again, still within the *Occupational Titles Exploration Route*, people will be able to generate lists of *Related Occupations*. This function will be useful, for example, for a person who has an occupation in mind, say *Farm Machinery Operator*, for which no vacancies appear to exist. The person could give the computer the code number for this occupation, then specify the types of things s/he finds most appealing about it. These may be things like the level of *earnings*, the fact that his/her Grade 11 *education* is sufficient, the fact that the work is basically *outdoors* etc. The computer will then instantly identify all of the occupations that are comparable to *Farm Machinery Operator* on the basis of these or any other topics.

The remaining 12 *Exploration Routes* follow a question and answer format. As an illustration, assume that a person, Pat, decides to use *Exploration Route #3, Occupational Interests*. Pat's conversation with CHOICES about *Interests* might go as follows:

CHOICES: Your interests can be very helpful in identifying promising possibilities. Please have a look at the following list, Pat.

1. **Dealing with things and objects (rather than people or animals).**
2. **Working in business contact with people in activities like organizing, interviewing, persuading others.**
3. **Working in routine, concrete and organized duties.**
4. **Helping other people through your work.**
5. **Working in situations where people will look up to you with respect.**



6. Working with people and communicating ideas.
7. Doing scientific (natural or social sciences) or technical work.
8. Doing abstract and creative work.
9. Working with machines, equipment and processes, where getting along with people is not important.
10. Doing work where you can clearly see the results of your efforts.

I'm going to ask you to choose one interest at a time from the above list. Some people can quickly decide the type of interests they want in their work. Others find it easier to choose the interests they don't want. So I can let you do either, Pat, or both. What do you want to do now?

1. Select one interest you would like.
2. Select one interest you would not like.

PAT: 1

CHOICES: Okay, choose one interest from the list above and type it in now.

PAT: 1

CHOICES:

TOTAL: 650 PREVIOUS: 650 NOW: 400

Would you like to add another interest, Pat?

PAT: Yes

CHOICES: What do you want to do now?

1. Select one interest you would like.
2. Select one interest you would not like.

PAT: 2

CHOICES: Okay, choose one interest from the list above, and type it in now.

PAT: 3

CHOICES:

TOTAL: 650 PREVIOUS: 400 NOW: 260

Would you like to add another interest, Pat? (Yes or No).

PAT: NO

CHOICES: Now we can do one of the following (Select one):

1. Change your answer(s) in 'INTERESTS'.
2. Change an answer in a previous Exploration Route.
3. Go on to another Exploration Route.
4. Try something else.

Dual-accessing has been built into *Exploration Route #4, Occupational Aptitudes*. In this case, users can either estimate their own levels on nine aptitude scales or they can complete the General Aptitude Test Battery (GATB) and input the tested aptitude profile. In both cases the computer will immediately respond with the number of occupations in its memory for which the entered profiles appear appropriate. For users who have either decided or been encouraged to try both exercises, the computer will produce a graphic comparison of the self-estimated and the tested aptitude profiles.

To this point we have discussed three of the 13 *Exploration Routes* to the *Occupations File* of CHOICES, namely: *#1 Occupational Titles; #3 Occupational Interests;* and *#4 Occupational Aptitudes*. The remaining 10 *Exploration Routes* are employed in similar fashion. To illustrate some other features of this system, perhaps it would be fruitful to continue Pat's conversation with CHOICES. Lets us further assume that Pat told CHOICES that after *Occupational Interests* s/he wished to look at the following *Exploration Routes* in this order:

#13 *Education Requirements*
8 *Indoor/Outdoor Considerations*
#12 *Earnings*

CHOICES: Your level of education will certainly affect the number of occupations available to you, Pat. Generally, the higher your education, the more occupations will be open to you.
Which of the following is true for you?

1. You are presently attending school (Any educational/training institution at any level).
2. You are no longer in school.

PAT: 2

CHOICES: Okay then. From the list below, please select the number for the level which you have completed. (Later if you wish to type in a higher level to find out how many more occupations would be available if you had more education, please go ahead).
Here is the list. (Select only one number).

1. Up to Grade 8.
2. Up to Grade 10.
3. Grade 12 or Grade 13.
4. 1 year or less of vocational/trade school or institute of technology.
5. 2 to 3 years of community college or institute of technology.
6. 3 to 5 years of university. (Undergraduate program).
7. 5 years or more of university. (Post-graduate program).

PAT: 3

CHOICES:

TOTAL: 650 PREVIOUS: 400 NOW: 95
What shall we do now?

1. Change your last answer.
2. Change an answer in a previous Exploration Route.
3. Go on to another Exploration Route.
4. Try something else.

PAT: 3

CHOICES: In many occupations you work mostly indoors, Pat. In others, mostly outside. Some require both inside and outside work.
Which would you prefer?
(Select one).

1. Working inside.
2. Working outside.
3. Working both inside and outside.

PAT: 2

CHOICES:

TOTAL: 650 PREVIOUS: 95 NOW: 20
What would you like to do now?

1. Find out which occupations remain.
2. Change your last answer.
3. Change an answer in a previous Exploration Route.
4. Go on to another Exploration Route.
5. Try something else.

PAT: 4

CHOICES: Some people consider earnings to be an important factor in choosing their occupation. Often, however, other factors can be much more important in determining job satisfaction, Pat. I encourage you to be as flexible as you can about the amount of money you feel you want.
Each of the occupations in my memory has been rated according to the highest earnings which are normally paid to experienced workers in the occupation.
Please select the level of earnings which you feel would satisfy you (as an experienced worker in an occupation).

1. Up to $5,000
2. $ 5,000 to $ 6,999
3. $ 7,000 to $ 8,999
4. $ 9,000 to $11,999
5. $12,000 to $14,999
6. $15,000 to $17,999
7. $18,000 to $20,999
8. $21,000 to $24,999
9. $25,000 and above
10. I'm not sure. Let's try something else.

PAT: 8

CHOICES:

TOTAL: 650 PREVIOUS: 20 NOW: 0
Your last answer has reduced the number of occupations meeting your needs to zero.
Here's what you can do, Pat.

1. Change your last answer.
2. Change an answer in a previous Exploration Route.
3. Try something else.

PAT: 1

CHOICES: Okay. I have erased your last answer from my memory. Let's try again! Please choose the number of the new answer you wish to give from the list of salary ranges above.

PAT: 7

CHOICES:

TOTAL: 650 PREVIOUS: 0 NOW: 5
What would you like to do now?

1. Find out which occupations remain.
2. Change your last answer.
3. Change an answer in a previous Exploration Route.
4. Go on to another Exploration Route.
5. Try something else.

PAT: 1

CHOICES: Your occupations are:

8333-114 Coppersmith
8333-118 Sheet-metal worker
8337-118 Boilermaker, erection and repair
8739-110 Electrician, powerhouse
9131-110 Locomotive engineer

There are several things you can do now. Which would you prefer?

1. **Change one of your answers to this point.**
2. **Find out more about any of these occupations.**
3. **Go on to another Exploration Route.**
4. **Find out why an occupation wasn't listed.**
5. **Try something else.**

The preceding conversation could, of course, have been totally different had Pat chosen other answers to CHOICES' questions at any point. To this point still only *six* of the 13 *Exploration Routes* in the *Occupations File* have been described. The remaining 7 are:

- *Occupational Fields* (CCDO Major Groups)

People can select from the list of CCDO Major Groups those fields of work which they would like either to enter or to avoid. For instance, a user may say, "I'm not really sure of what kind of work I should do, but I know I *don't* want to work in *Forestry and Logging Occupations* or in *Transport Equipment Operating Occupations!*" CHOICES then discards all of the occupations from these two fields and only searches in the remainder of the fields from this point on. This *Exploration Route* can also be used in the opposite way. A user may say, for example, "I don't know the exact occupation I want but it will be in *Teaching, Religion* or the *Social Sciences.*"

CHOICES encourages users *not* to eliminate occupational fields from their exploration unless they are absolutely sure of their reasons for rejection.

- *Temperament Factors*

This *Exploration Route* is similar to *Interests*. Here users select, from a list of 11 *work situation* descriptions, those items they feel are most appealing and those they are inclined to avoid. As is the case in all *Exploration Routes*, once users see CHOICES' feedback to their decisions they can change their minds and their input.

- *Physical Demands*

CHOICES provides a range of five different levels of physical exertion for people who wish to use this *Exploration Route*. It allows them to specify the maximum level(s) they feel would be acceptable in their work.

- *Physical Activities*

In this *Exploration Route* CHOICES lists 14 different types of physical activities such as: lifting; climbing/balancing; standing for long periods; hearing; observing differences between colours; etc. Those who have physical impediments of any kind, or simply wish to avoid certain types of activities, may find this *Exploration Route* very useful.

- *Conditions of Working Environment*

For those who wish to use this *Exploration Route*, CHOICES lists seven working environment factors. Users then identify any factors, such as working in extreme

heat, which they feel unwilling to accept on a regular basis in their work.

- *Hours of Work, Travel, etc. Characteristics*

Users who select this *Exploration Route* are exposed to a list of six items. Here users can reject items they do not wish to accept, such as: shift work; work of a seasonal nature; work that requires some travelling; etc.

- *Projections of Supply and Demand for Workers*

To many people an important consideration in choosing suitable occupations may be future outlook. CHOICES allows these people to explore three future outlook items. They may say, for example, "I am only interested in occupations for which the demand for workers is increasing."

Users may use whichever *Exploration Routes* they wish, in whatever *sequence*, in the *Occupations File* of CHOICES. Furthermore, they can change their minds and their instructions to CHOICES at any point.

Although the *process* of exploration with CHOICES will be a valuable learning exercise in career decision-making in itself, the desired end-product is a list of occupations suitable for the user. At any point during the exploration process that the number of suitable occupations (the number in the NOW space on the printout) is 25 or less, CHOICES asks the user if s/he wishes to know the names of the occupations. This may happen several times during an interaction and the user may obtain as many lists as s/he desires.

Once users have obtained a list of occupations, there are several things they can do. They can request detailed information about any of the occupations on the list, including a full printed monograph for each occupation (detailing sources for additional information). They can compare information on any of the occupations on the list in all categories they feel to be personally relevant. They can also discover why an occupation did not appear on the list. For instance, if prior to the interaction a user was considering becoming a *Computer Operator*, and CHOICES did not list this as a suitable occupation, the user can say *"Why Not?"* CHOICES then immediately responds with something like, "because you want too much money and your education level is insufficient."

The Educational/Training Institutions File

Theories of career decision-making suggest that people should choose educational and training programs and institutions *after* they have reached at least tentative decisions on the type of work they would like to do. Few would deny the logic of this sequence, since one major goal of programs offered by post-secondary institutions is to prepare students for careers. The programs are not, in most cases, *ends* in themselves.

Research indicates, however, that a great many people in post-secondary institutions have no clear ideas about the type of work they expect to do after they graduate. There are several explanations for this phenomenon, including the following:

1 the high degree of difficulty for many people in making an occupational decision, a decision that will reflect itself in every aspect of their lives thereafter. A certain amount of avoidance and procrastination is therefore not surprising.

2 the pressures on people (particularly young people) to further their education, whether or not they know where it is leading.

3 the difficulty, in many instances, of relating educational programs to occupations, and vice versa.

The CHOICES *Institutions File*, while by no means a panacea for these difficulties, should be of significant assistance to people of all ages in making career decisions. This file will include information on all Canadian universities, colleges, technical institutes, and vocational/trade schools.

The same form of exploration will be possible with the *Institutions File* as with the previously described *Occupations File*. Users will be able to obtain *Specific Information* about any institution; *Compare* information about two or three institutions at a time; and use whichever *Exploration Routes* they wish, in the sequence they prefer, to obtain a list of institutions that may meet their needs. The following *Exploration Routes and information topics* have been tentatively selected for inclusion in this file:

1 *Institutional Location and Characteristics* such as the size of the community in which an institution is located, the province in which it is found and the type of institution it is. (i.e. university, college, etc.)

2 *Housing Information* such as the type of housing available, its cost and its availability.

3 *Institutional Policies* such as categories of students accepted, required applications fees and admissions deposits, and the fee payment schedule.

4 *Student/Faculty Population*, including the total enrolment, percentage male and female, numbers of teaching staff and the percentage of in-province, out-of-province and foreign students attending the institution.

5 *Program Information*, including the names of all programs offered at each institution, their duration, language of instruction and examination, session start dates, tuition and compulsory fee costs and admission requirements.

As well, information about the number of applicants to each program, the percentage accepted and the percentage sucessfully completing the first period of training will be available.

6 *Apprenticeship and Pre-apprenticeship* programs available at each institution.

7 *Graduate Level programs* including both the name and academic level of the program.

8 *Telephone Numbers* for further information.

Using the CHOICES *Institutions File* it may be possible, for example, for a person to say, "I wish to attend an institution that provides a diploma in *Business Administration;* has fewer than 5,000 students; offers instruction in French; and accepts my 60% high school average. As the person feeds in each of these criteria, CHOICES responds instantly with the number of institutions meeting each of these criteria (as well as all preceding criteria). At the push of a key on the computer terminal, CHOICES produces a list of names of all institutions meeting the user's specifications. These could be institutions all across Canada, or in a specific province. Also, users can ask *"Why not?"* if an institution they had been considering does not appear on any of the CHOICES printouts.

The example above is a simple one indeed. The potential for variety in patterns of accessing this file is substantial.

Why computerize?

People frequently have distorted perceptions of occupations based upon incomplete, inaccurate or misleading information, and arbitrarily reject occupations on the basis of name alone. If they knew more about these occupations, it is conceivable that they would find some of them highly appealing.

The *CAREERS PROVINCES* career information series, produced by the *Occupational and Career Analysis and Development Branch*, is comprised of 12 separate sets of 650 occupational leaflets; one set for each province and territory. Each leaflet includes detailed, up-to-date information on a specific occupation in a particular province or territory. The *Preparation and Training*, *Earnings*, *Future Outlook* and other sections are written to reflect provincial/territorial labour market realities. This series forms the information base for the occupational file of CHOICES.

Because of the time involved, people cannot be expected to read all 650 of the *Careers Provinces* leaflets. Most will probably read only those leaflets that describe occupations they consider potentially satisfying. It is possible, therefore, that individuals may never explore their *full* range of occupational options. In all likelihood, *some personally rewarding occupations or career patterns may not be considered.*

The *Careers Provinces* series has substantially increased the quantity of reliable data available to career seekers. To use this series optimally, however, it is essential that people quickly retrieve *ALL* the information relevant to their needs. Computers are capable of doing this much more efficiently than it can be done manually.

The computer can store and quickly retrieve vast quantities of information. It can relate numerous and distinct pieces of information, and can repeat the same process in identical fashion innumerable times *without ever becoming tired, impatient, bored or making mistakes.* It can also simulate a conversation.

Furthermore, the computer's update capabilities make it possible to ensure that all the stored information is *current.* Traditionally, before the advent of *Careers Provinces*, career information monographs were sometimes unreliable because the salary information, future outlook, training requirements, legislation and even occupational title were often out-of-date and therefore misleading.

Another major benefit of computerized delivery of career information is that the system can be designed to allow interrogation and exploration in any language. CHOICES *will be fully operable in both English and French.*

CHOICES is one element of a comprehensive career guidance system. All system components are bonded by a common link, which is the information contained in the *Canadian Classification and Dictionary of Occupations*. They include:

1 Volumes I and II of the Canadian Classification and Dictionary of Occupations;

2 650 Careers Provinces leaflets (covering all CHOICES occupations in detail);

3 34 Careers Canada booklets (covering all CHOICES occupations in detail);
4 Creating a Career — a curriculum-based career planning program;
5 The Trade Analyses Series of apprenticeable occupations;
6 The University and Community College Program Offering Tables;
7 The Index to Canadian Occupations (ICO);
8 The Accessing a Career by Traits (ACT) Kit.

Implications for counselling

The Department of Manpower and Immigration provides employment counselling to Canadians. Employment counselling is defined by the department as:

"The process of dynamic interchange between counsellors and clients whereby counsellors assist clients to:

1 articulate and clarify the nature of employment problems;
2 increase self-understanding in terms of personal resources, interests, aspirations and other occupationally and vocationally related characteristics;
3 relate this knowledge to the world of work;

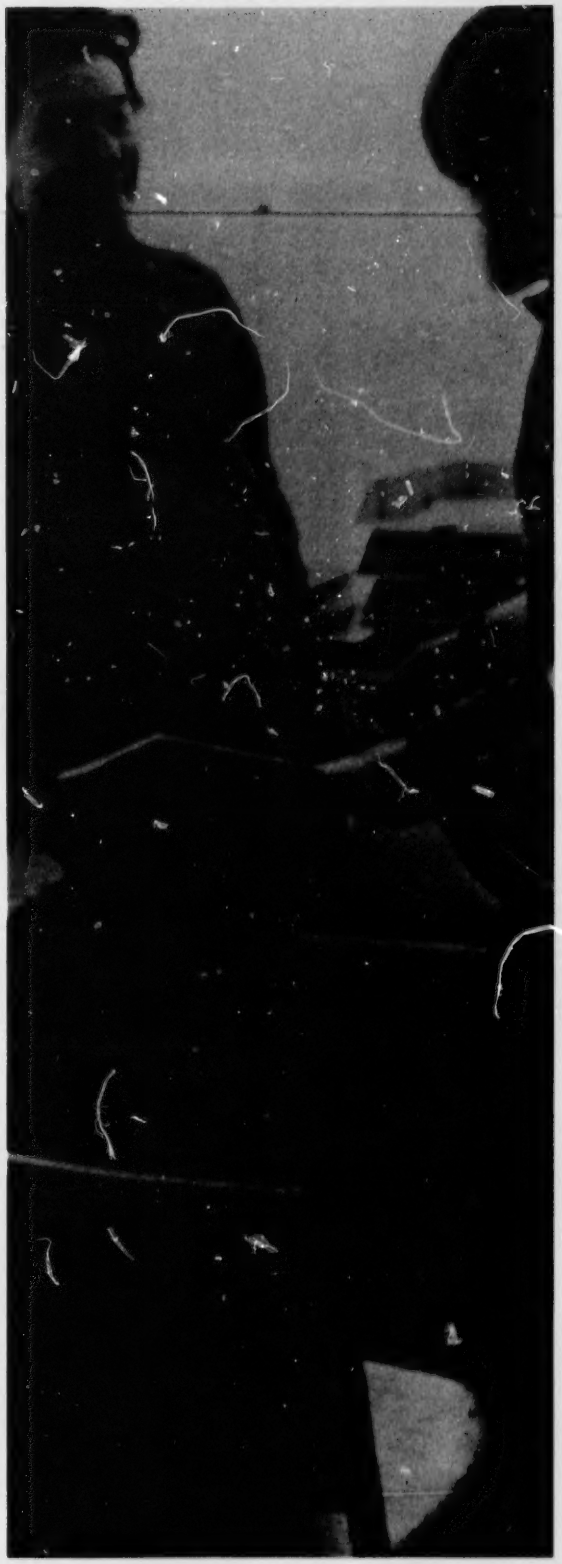
4 identify and assess a number of alternative solutions to employment problems; and

5 choose and become committed to courses of action to overcome difficulties and secure enriching and satisfying employment."

CHOICES requires that people, in consultation with CMC counsellors, consider *and make decisions* regarding their personal resources, interests, aspirations, etc., (as in sub-component 2 of the above definition). It then relates these decisions to the world of work (sub-component 3 above) *in a manner and at a speed impossible for human counsellors*. In addition, CHOICES presents a considerably fuller range of options than would normally be suggested by a counsellor, without any gaps or distortion resulting from sex, age or other forms of bias. To the computer all users are absolutely equal. CHOICES then goes on quickly to provide information on all of the educational and training options that support the person's occupational goals, again with a speed and thoroughness beyond the capacity of a human counsellor.

Several people could be interacting with CHOICES terminals simultaneously in a Canada Manpower Centre. Each person would have a private conversation with the computer, since s/he would be receiving immediate responses, even though entirely different segments of the data files were being explored. The computer would never get tired, bored, wish it were somewhere else, or need a coffee break!

In terms of the department's operational definition of employment counselling, CHOICES may be a valuable asset in assist-



ing clients with employment problems. However, CHOICES *actually does little counselling*. It is basically a highly sophisticated information retrieval system. It does exceptionally well those things counsellors have never been able to do adequately: keeping totally up-to-date on all aspects of the full range of occupations, training programs and institutions in this country and then being able to relate *instantly* any of this information to personal data about a client.

It is anticipated that the average duration of an interaction with CHOICES will be between fifteen and thirty minutes. A separate *Counsellor Accessing Mode* will also be incorporated which will allow counsellors 'short-cuts' to specific information components of the system.

In this respect CHOICES is expected to substantially reduce many of the tedious, repetitive, essentially clerical, information-giving functions on which counsellors must currently spend much of their time. This will free counsellors to spend a larger proportion of their time in more advanced counselling functions.

CHOICES is intended for use, where possible, in a counsellor-mediated mode. Counsellor involvement, or mediation, in the process of pre-planning the interaction, and in evaluating the ouput from the computer, is important because users are prone to accept unquestioningly the computer's recommendations regarding career options. It is anticipated that many CHOICES users will tend to feel that suggestions from this sophisticated mechanical brain *must* be correct. These users will be failing to realize that the *response of the computer can never be more realistic or appropriate than the input of the user*, though this will be pointed out clearly in the USER GUIDE. If a person tells CHOICES the 'wrong' *Interests and Aptitudes*, the system will recommend the 'wrong' occupations. Counsellor mediation will help to ensure both appropriateness of input and realistic evaluation of output. (Both the client and counsellor will receive a full printed record of the client's conversation with CHOICES.)

Conclusion

Experience with operational computerized career information systems in North America has been positive. Counsellors, for example, feel that this mode of career information delivery enriches the occupational decision-making process by simulating exploratory activity and by introducing more order into the decision-making and counselling process. They also feel that the level of client participation in the career planning process is raised and that more meaningful client-counsellor communication is facilitated. More and better information is made available in the time usually spent by counsellors on information delivery. With the exception of the severely disadvantaged who lack basic language skills, disadvantaged clients are able to use, and gain the same benefits from, the system as non-disadvantaged clients.

Note: CHOICES provides a larger number of *Exploration Routes* to both the *Occupations* and the *Institutions* files than does any other system. Furthermore, CHOICES includes data on 650 occupations as opposed to the average of two to three hundred offered by other currently operative systems.

The notion of a personal conversation with a computer to obtain career information is highly appealing to clients. Because elements both of mystery and fun are involved, the experience is not only rewarding but also enjoyable. Experience has shown that people do not have any fear of the technology involved. In fact, for a variety of reasons, a significant number of people who would never go to a counsellor will go to a computer terminal.

To reiterate, the computer is much better suited to some types of information retrieval and analysis than are human counsellors, yet counsellors must, at present, spend a great deal of time in precisely these functions. By capitalizing on the computer's unique capacities, CHOICES makes a powerful tool available to counsellors; one that will allow them to use the limited time available for each client most productively.